Chapter Two

Purpose and Need

Final Environmental Impact Statement

Vancouver Rail Project

Amtrak *Cascades* trains operate on tracks owned by The Burlington Northern and Santa Fe Railway (BNSF). As such, the Amtrak *Cascades* share tracks with freight trains. With current and projected increases in freight rail service in this corridor, the tracks are becoming more congested.

Freight traffic and storage in the Vancouver Rail Yard

Congestion has resulted from increased trains on the track, as well as chokepoints along the corridor -- particularly where bridges limit the system and where freight trains are put together and/or taken apart. If passenger trains are to continue to provide fast, frequent, reliable and safe service, improvements must be made to relieve or bypass current chokepoints.

Recent railroad computer modeling and analysis (performed by WSDOT and BNSF) indicates that physical improvements in and around the Vancouver rail yard could eliminate a major chokepoint within the entire passenger rail system and help ensure continued capacity for passenger rail service. Chapter Three of this document provides greater detail about the **Vancouver Rail Project** and its alternative improvements.

What is the purpose of the Vancouver Rail Project?

The purpose of the **Vancouver Rail Project** is to provide reliable and safe passenger rail service without degrading freight operations. Since current freight operations result in passenger train delays, the first step towards increasing service reliability is to eliminate as many conflicts between passenger and freight trains as possible – without degrading current and future freight operations. Eliminating pedestrian and vehicular traffic across the railroad tracks would provide a safer environment for pedestrians and motorists as well as rail passengers.

Freight trains often stack up in the Vancouver rail yard area and block movement of the faster moving passenger trains. Schedule reliability of the passenger trains is often compromised. By simply clearing up some of the congestion in and around the rail yard, passenger train reliability would increase (schedule adherence) and potential vehicular (or pedestrian)/train conflicts would decrease.

Why do we need the Vancouver Rail Project?

Pursuant to its legislative directive, WSDOT is incrementally improving passenger rail service in western Washington. The state's goal for the passenger rail program is to provide safe, reliable, fast and frequent service. Congestion in and around the Vancouver rail yard compromises the State's obligation to provide reliable and safe intercity passenger rail service.

The Vancouver rail yard is located at the junction of two main line routes that travel north-south (Seattle-Portland line) and east-west (Vancouver, WA-Spokane line). In addition, it is located just north of the Columbia River. Due to its strategic location, delays and conflicts are common in and around the rail yard, thus threatening the reliability of passenger rail trains. Data provided by BNSF[1] indicate that a passenger train can be delayed in or around the Vancouver rail yard from two to 22 minutes per day during an average week, with a daily average of about ten minutes delay to passenger trains.

The **Vancouver Rail Project** is needed to eliminate conflicts that contribute to this decrease in reliability and safety, while assuring that freight operations are not hampered. Four specific areas of conflict need to be resolved: crew changes; bridge openings; yard activities; and grade crossings.[2]

Crew Changes

Freight trains moving between the Seattle and Spokane main lines change crews in Vancouver. Crew changes take place along the single-track connection linking the Seattle and Spokane lines (see **Exhibit 2-1**). Because of the length of the freight train,[3] the train blocks the eastern main line track during the crew change operation.

The time required to change crews may range from five to fifteen minutes under normal conditions. However, often the train arrives before the crew and then has to wait (on the main line) for up to one hour for the crew to arrive. Once the crew has been changed, the track connecting the two lines must be cleared before other freight or passenger trains can travel through the area. This single-line track has a speed restriction of ten miles-per-hour (mph), further exacerbating the time required to move trains through this track.

It is estimated that crew changes (combined with speed limitations) contribute to one main line track being closed to through traffic for four hours per day. It is estimated that by year 2020, one main line track could be closed to through traffic for nine hours per day.[4]

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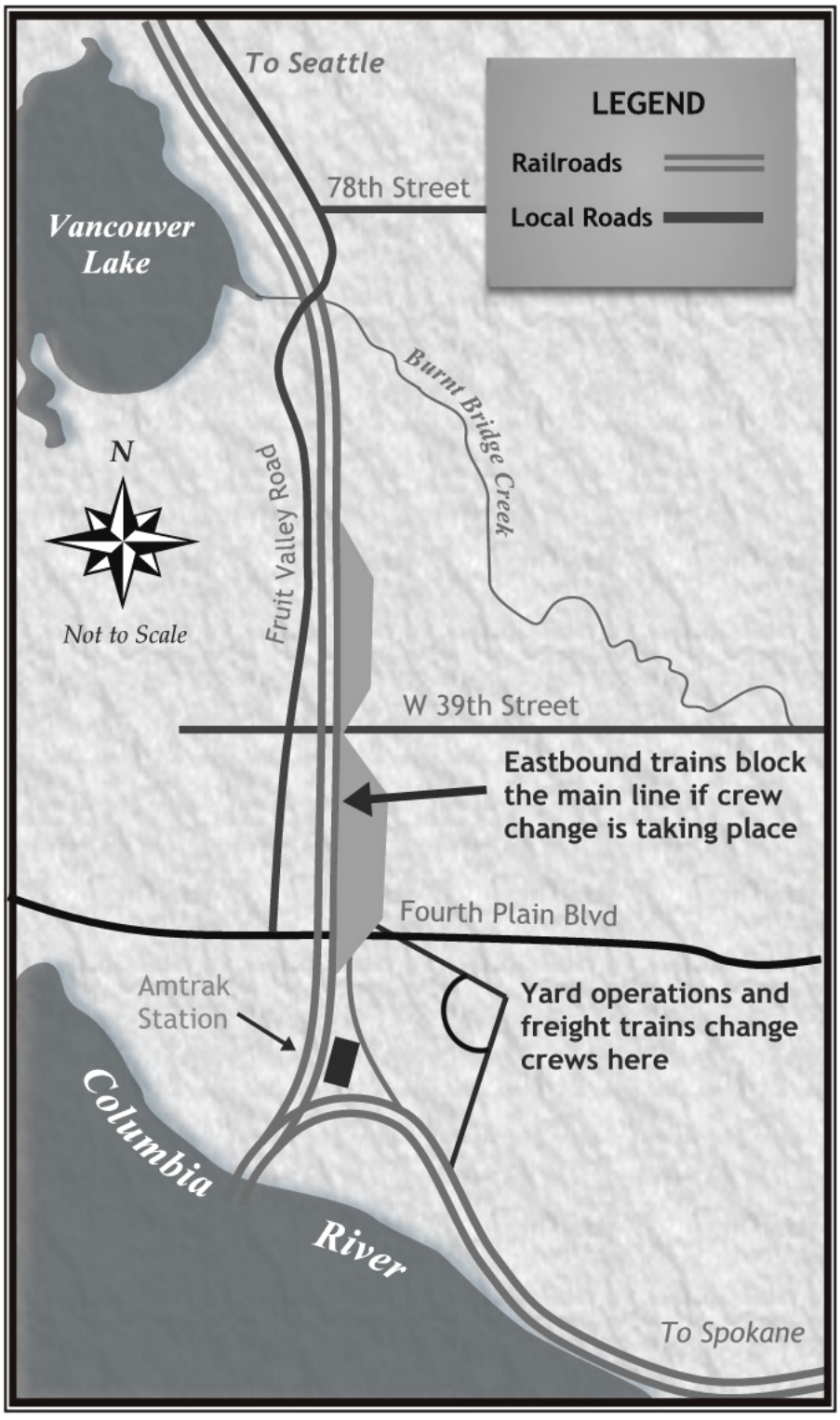
[1] *Information provided in August 2000.*

[2] ***Exhibit 2-1*** *illustrates the current track configuration of the Vancouver rail yard and the general location of these conflict areas.*

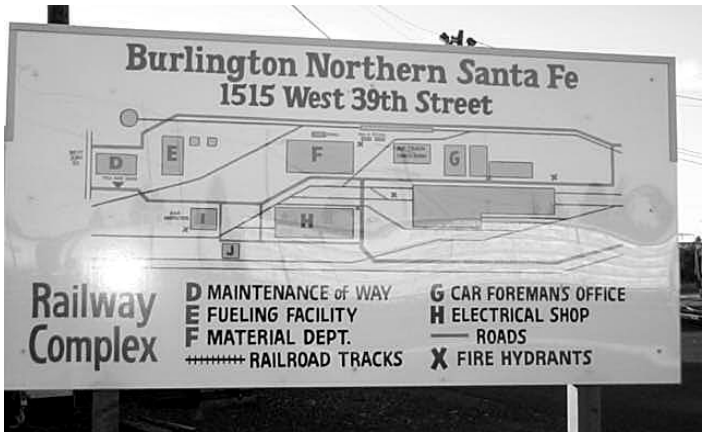
[3] *Typical freight trains in the Pacific Northwest Rail Corridor consist of 100 to 110 cars. A typical car ranges from sixty feet to 89 feet in length. A typical freight train is over one mile in length.*

[4] *Transit Safety Management for the Washington State Department of Transportation, Rail Office, Draft White Paper: Why New Track is Necessary at Vancouver, Washington, July 2000.*



Crew Change Area and Track Configuration
Exhibit 2-1

The **Vancouver Rail Project** is needed to provide additional capacity on the main line. It is feasible that due to crew changes and other circumstances, both main line tracks[5] could be blocked at the same time. By adding additional tracks, at least one line could be open at all times for passenger trains, thus ensuring reliable service.



Vancouver Rail Yard maintenance facility layout

Bridge Openings

The Vancouver rail yard is located north of the Columbia and Willamette Rivers. Three drawbridges span these rivers and are required to open whenever marine traffic wishes to pass. Even if a train is heading south towards one of these drawbridges, marine traffic has the right-of-way. These bridges have a tremendous effect on the movement of trains (passenger and freight) through the corridor. **Exhibit 2-2** illustrates the number of bridge openings during a typical peak season week. **Exhibit 2-3** illustrates the locations of these drawbridges.

As a train travels south towards the rivers, it is virtually impossible to know in advance if the bridges will be opened. Once the freight train enters the general Vancouver area, it is often necessary to hold the train on the main line (just north of the rail yard) if the bridge opens, thus blocking through traffic on that track. This results in only one track for freight and passenger operations. If crew changes are taking place on the other track, passenger trains in either direction could be delayed.

Bridge Openings Affecting Amtrak *Cascades* Service

Exhibit 2-2

Example of Typical Peak Day

BRIDGE	AVERAGE DAILY OPENINGS	AVERAGE WEEKLY OPENINGS
Columbia River Bridge	16	110
Oregon Slough Bridge	< 1	5
Willamette River Bridge	18	129

Source: Burlington Northern and Santa Fe Railway (BNSF), August 2000

[5] *The north-south main line and the east-west main line.*

Drawbridges Along the BNSF North-South Main Line
Exhibit 2-3

The **Vancouver Rail Project** is needed to provide additional through capacity on the main line. By adding additional tracks, at least one line could be open at all times for passenger trains, thus ensuring reliable service.

Yard Activities

Activities in the Vancouver rail yard focus on the overall operation of freight delivery and vehicle maintenance. A freight railroad is a package delivery system for very large packages. Each freight car is effectively a package with an origin and a destination. Some freight trains, generally carrying bulk commodities such as grain and coal, are shipped as a single package with all cars having the same origin and destination. Most freight trains, however, consist almost entirely of separate packages of freight. Just as a parcel delivery or express service must take all packages to a location where they are sorted and assigned to a delivery vehicle, a railroad must maintain freight yards where the cars are sorted by destination and assigned to a train.

The other main activity of a rail yard is vehicle maintenance. Before and after a journey, and after unloading and reloading, freight cars are inspected for defects. Defective cars must be placed on special-purpose tracks to be repaired. Locomotives must also be inspected after and before a journey and must also be repaired as well as serviced with fuel, water and traction sand. This work also requires a specialized facility generally adjacent to a freight yard. In order to sort cars onto the various tracks, a track known as a lead must extend from the end of a yard, often from both ends, sufficiently long to allow a track full of cars to be pulled completely out of the yard. This allows each car to be uncoupled (separated) and pushed onto the track appropriate for the destination.

Many of these yard activities share the single connecting track linking the Seattle line to the Spokane line with trains (passenger and freight) traveling to/from Pasco[6]. Use of this line – either for crew changes or yard operations – can result in a blockage to the main line by holding trains (on the main line) while the connecting track is cleared. Stopping yard activities on this line to let a passenger train through (traveling north from Portland) would result in disruption to freight operations. This limitation affects the capacity of the Seattle line, the Spokane line and Vancouver rail yard operations. Additional tracks, as part of the **Vancouver Rail Project,** would solve this conflict and allow passenger trains to travel through the area without impacting freight operations.

Grade Crossings

A total of seven tracks (including the main line and siding/yard tracks) cross West 39th Street. On a daily basis, about one hundred freight trains move through this grade crossing. These trains are approximately one mile in length and travel ten to fifteen miles per hour. An additional fifty switching[7] movements also occur across West 39th Street. The rail yard operates 24 hours a day, seven days a week with a total of 150 daily movements at West 39th Street. These train movements block the roadway an average of about eight hours per day. Recent visual observations

[6] *Amtrak's Empire Builder travels between Portland and Pasco via the Spokane main line.*
[7] *When trains are moved from one track to another.*

revealed that vehicles occasionally ignore the warning signals at the rail crossing and drive around the gates in order to avoid these delays.[8]

Projections indicate that the number of freight trains blocking West 39th Street will increase, with West 39th Street being closed almost twenty hours per day by year 2020. It can only be assumed that as delays at West 39th Street increase, so too will illegal crossings around warning gates. Although reported accidents at this rail crossing average about one every other year,[9] it is likely that as more trains operate in this area, accidents will also increase. **Exhibit 2-4** summarizes current and future rail operations and delays at West 39th Street.

To ensure the reliability of passenger rail service, as well as to ensure safe movement for train passengers and vehicular passengers, elimination of this at-grade crossing is needed.

Was the Vancouver Rail Project designed to address each of these conflict areas?

Various design alternatives were developed by the project team and Vancouver community members to address these conflict areas. These alternatives are presented in Chapter Three of this environmental document.

Train and Vehicular Activity in the Vancouver Yard

Exhibit 2-4

Rail Traffic and Delays at West 39th Street

	YEAR		PERCENT CHANGE
	2000	2020	
Daily Through Trains (total in both directions)	100	279	
Daily Train Switching	50	139	
Total Trains crossing West 39th Street	**150**	**418**	**179%**
West 39th Street Average Daily Closing (in hours)	8	20	150%

Source: David Evans and Associates, West 39th Street Rail Crossing Transportation Analysis, April 2000.

[8] *David Evans and Associates, West 39th Street Rail Crossing Transportation Analysis, April 2000, page 11 and visual observation by The Resource Group, July 2000.*

[9] *Between 1982 and 1994, Federal Railroad Administration and Burlington Northern Santa Fe Railway Company records indicate six reportable accidents at the West 39th Street crossing.*

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